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PROFESSOR ROBERT MORRIS OGDEN, of Cornell University, has been appointed lecturer on education at Harvard University for the second half of the academic year 1922-23.

DR. UHLENHUTH, director of the Behring Institute for Experimental Therapy in Marburg, has received a call to the chair of hygiene in Bonn, as the successor of Professor Neumann, who has accepted the position left vacant in Hamburg by the death of Professor Dunbar.

## DISCUSSION AND CORRESPONDENCE

### THE PRODUCTION OF SPECIES

TO THE EDITOR OF SCIENCE: It is often remarked by biologists who have never studied organisms in the field, that it is easy "to develop forms at will indistinguishable from actual species."

To my mind, this is one of the most deceptive of the anti-Darwinian heresies. A species is not merely a form or group of individuals distinguished from other groups by definable features. A complete definition involves longevity. A species is a kind of animal or plant which has run the gauntlet of the ages and *persisted*. Spreading across or around barriers, a species may break up into parallel or geminate species, each having run a special gauntlet of its own, its primitive qualities altering through selection, usually slowly, in the progress of the centuries. A new form inaugurated through change of surroundings, through persistent selection and segregation, or through hybridization, is not a "species" until it can hold its own with the rest. None of the created "new species" of plant or animal I know of would last five years in the open, nor is there the slightest evidence that any new species of field or forest or ocean ever originated from mutation, discontinuous variation or hybridization.

Garden or greenhouse products are immensely interesting and instructive, but they throw little light on the origin of species. To call them species is like calling dress-parade cadets "soldiers." I have heard this definition of a soldier—"one that has stood." It is easy to trick out a group of boys to look like soldiers, but you can not define them as such until

they have "stood." A greenhouse variant is easily secured; with some plants excessive variability is itself a specific character. But temporary variations have no taxonomic value. A form is not a species until it has "stood."

The production of species from ancestral forms is a process which has striking analogies to the formation of words from older roots. It is easy to make a new word, as a variant or mutation from an older root, or even to create one without a root. But these creations are not words. They do not get into the dictionaries until they have "stood." They must have held their own in the gauntlet of speech which every word has to run. The new words may look as good as old ones. Riley's "gems that laugh hysteric lights, the glittering quespar, guenk and pleocynth," sound technical enough, but these are freaks of the poet, not real words. Being artificial and unreal they are not actual words, never having "stood" in the linguistic struggle for existence.

DAVID STARR JORDAN

### THE TEACHING OF EVOLUTION

READERS of Professor Pickett's article on "The Teaching of Evolution"<sup>1</sup> will agree that "the teaching of science, particularly of biology or related subjects, in the high school is the chief area of stress." The teaching of introductory biology demands great tact, and, of course, not all teachers have tact. However, the responsibility for the conflict between religious teaching and scientific teaching can not be placed on those teachers.

Opposition to the doctrine of evolution by Mr. Bryan and those of similar views is not opposition to what Professor Pickett calls theories of evolution. It is opposition to the doctrine of evolution in any form whatever. The dispute between Neo-Darwinian and Neo-Lamarckian does not interest them except as cause for encouragement. To them Darwinism means evolution, nothing more. With an unbending mind they recognize disagreement between the plain literal biblical account of creation and the doctrine of evolution. They embrace the former and are unable to accept any of the compromises that have been offered.

<sup>1</sup> SCIENCE, September 15, 1922, LVI, 298.